WHAT IS CLAIMED IS:

1. An automated process for isolating and amplifying a target analyte that may be present in a fluid sample contained in each of a plurality of reaction receptacles, said process being performed at a plurality of stations between which each reaction receptacle is transported by an automated receptacle transporting system including one or more automated receptacle transport mechanisms, each said automated receptacle transport mechanism being constructed and arranged to retrieve at least one of said reaction receptacles from one of said stations and transport said reaction receptacle to another of said stations, said plurality of reaction receptacles being initially held in a holding station for holding said plurality of reaction receptacles prior to commencement of said process, said process comprising the following steps performed on each of said reaction receptacles:

retrieving one of said reaction receptacles from said holding station with said automated receptacle transporting system, wherein each said reaction receptacle retrieved from said holding station further contains a solid support material;

transporting said reaction receptacle to a first incubation station with said automated receptacle transporting system, said first incubation station comprising one or more incubators, each defining an enclosed temperature-controlled incubation chamber;

permitting said reaction receptacle to dwell within said incubation chamber of said first incubation station for a period of time and under conditions sufficient to permit said target analyte to be immobilized by said solid support material;

retrieving said reaction receptacle from said first incubation station with said automated receptacle transferring system;

transporting said reaction receptacle to a separation station with said automated receptacle transporting system;

performing a target analyte separation procedure at said separation station, wherein said target analyte separation procedure includes isolating said solid

support material within said reaction receptacle from said fluid sample and removing said fluid sample from said reaction receptacle;

retrieving said reaction receptacle containing said solid support material from said separation station with said automated receptacle transferring system;

transporting said reaction receptacle to a second incubation station with said automated receptacle transporting system, said second incubation station comprising one or more incubators, each defining an enclosed temperature-controlled incubation chamber, wherein said first and second incubation stations are independent of one another or share at least one incubator in common;

dispensing an amplification reagent into said reaction receptacle prior to or after transporting said reaction receptacle to said second incubation station; and

permitting said reaction receptacle to dwell within said incubation chamber of said second incubation station for a period of time and under conditions sufficient to permit said target analyte to be amplified.

2. The method of claim 1, wherein said target analyte separation procedure further comprises:

dispensing a wash buffer into said reaction receptacle after removing said fluid sample from said reaction receptacle;

agitating said reaction receptacle to mix said wash buffer and said solid support material;

isolating said solid support material within said reaction receptacle from said wash buffer; and

removing said wash buffer from said reaction receptacle.

3. A transport mechanism for transporting a reaction receptacle between stations of an automated analyzer, the reaction receptacle including a manipulating structure, said transport mechanism comprising:

a receptacle carrier assembly constructed and arranged to be rotatable about an axis of rotation and to receive a reaction receptacle and carry the

reaction receptacle while said receptacle carrier assembly rotates about said axis of rotation;

a manipulating hook member interrelated with said receptacle carrier assembly so as to be movable with respect thereto, said manipulating hook member being constructed and arranged to be engageable with the manipulating structure of the reaction receptacle; and

a hook member drive assembly including a hook motor having fixed structure carried by said receptacle carrier assembly in a fixed position with respect thereto and a lead screw mechanism including a threaded shaft oriented in a generally radial direction with respect to said axis of rotation and having an end coupled to said manipulating hook member, said lead screw mechanism being operatively coupled with said hook motor and being constructed and arranged to convert powered motion of said hook motor into movement of said threaded shaft with respect to said fixed structure of said hook motor in either axial direction of said threaded shaft to thereby cause corresponding movement of said manipulating hook member with respect to said receptacle carrier assembly so that a reaction receptacle engaged by said manipulating hook member can be moved with respect to said receptacle carrier assembly.

4. An incubator for receiving a plurality of reaction receptacles containing reaction fluids and maintaining the reaction fluids in a temperature controlled environment, said incubator comprising:

a housing including a receptacle access opening formed therein for allowing movement of a reaction receptacle into or out of said housing through said receptacle access opening;

a command-responsive closure mechanism connected to said housing in proximal relation to said receptacle access opening, said command-responsive closure mechanism being constructed and arranged to be movable between a closed position and an open position with respect to said receptacle access opening in response to corresponding closure movement commands to prevent or permit access to said housing through said access opening,

said housing and said command-responsive closure mechanism constituting an enclosure defining an incubation chamber therein;

a heat source in thermal communication with said incubation chamber;

a powered fan mechanism disposed within said incubation chamber and constructed and arranged to generate air movement within said incubation chamber to promote a generally uniform temperature distribution internal to said incubation chamber;

a receptacle carrier disposed within said incubation chamber and including a plurality of receptacle stations, each of said receptacle stations being constructed and arranged to carry a single reaction receptacle, said receptacle carrier being constructed and arranged to present any of said plurality of receptacle stations in a receptacle transfer position with respect to said access opening.

5. An incubator for receiving a plurality of reaction receptacles containing reaction fluids and maintaining the reaction fluids in a temperature controlled environment, said incubator comprising:

a housing including a receptacle access opening formed therein for allowing movement of a reaction receptacle into or out of said housing through said receptacle access opening;

a command-responsive closure mechanism connected to said housing in proximal relation to said receptacle access opening, said command-responsive closure mechanism being constructed and arranged to be movable between a closed position and an open position with respect to said receptacle access opening in response to corresponding closure movement commands to prevent or permit access to said housing through said access opening,

said housing and said command-responsive closure mechanism constituting an enclosure defining an incubation chamber therein;

a heat source in thermal communication with said incubation chamber;

a receptacle carrier disposed within said incubation chamber and including a plurality of receptacle stations, each of said receptacle stations being

constructed and arranged to carry a single reaction receptacle, said receptacle carrier being constructed and arranged to present any of said plurality of receptacle stations in a receptacle transfer position with respect to said access opening; and

a receptacle mixing mechanism mounted on said housing and constructed and arranged to agitate a reaction receptacle carried in a receptacle station disposed in an operative position with respect to said mixing mechanism to thereby mix the reaction fluids contained in the reaction receptacle.

6. Modules for an automated analyzer comprising:

(A) a transport mechanism for transporting a reaction receptacle from one of said modules to another of said modules, the reaction receptacle including a manipulating structure, said transport mechanism comprising:

(1) a receptacle carrier assembly constructed and arranged to be rotatable about an axis of rotation and to receive a reaction receptacle and carry the reaction receptacle while said receptacle carrier assembly is rotating about said axis of rotation;

(2) a manipulating hook member interrelated with said receptacle carrier assembly so as to be movable with respect thereto, said manipulating hook member being constructed and arranged to be engageable with the manipulating structure of the reaction receptacle; and

(3) a hook member drive assembly including a hook motor having fixed structure carried by said receptacle carrier assembly in a fixed position with respect thereto and a lead screw mechanism including a threaded shaft oriented in a generally radial direction with respect to said axis of rotation and having an end coupled to said manipulating hook member, said lead screw mechanism being operatively coupled with said hook motor and being constructed and arranged to convert powered motion of said hook motor into movement of said threaded shaft with respect to said fixed structure of said hook motor in either axial direction of said threaded shaft to thereby cause corresponding movement of said

manipulating hook member with respect to said receptacle carrier assembly so that a reaction receptacle engaged by said manipulating hook member can be moved with respect to said receptacle carrier assembly; and

(B) an incubator for receiving a plurality of the reaction receptacles containing reaction fluids and maintaining the reaction fluids in a temperature controlled environment, said incubator comprising:

(1) a housing including a receptacle access opening formed therein for allowing movement of a reaction receptacle into or out of said housing through said receptacle access opening;

(2) a command-responsive closure mechanism connected to said housing in proximal relation to said receptacle access opening, said command-responsive closure mechanism being constructed and arranged to be movable between a closed position and an open position with respect to said receptacle access opening in response to corresponding closure movement commands to prevent or permit access to said housing through said access opening,

said housing and said command-responsive closure mechanism constituting an enclosure defining an incubation chamber therein;

(3) a heat source in thermal communication with said incubation chamber;

(4) a receptacle carrier disposed within said incubation chamber and including a plurality of receptacle stations, each of said receptacle stations being constructed and arranged to carry a single reaction receptacle, said receptacle carrier being constructed and arranged to present any of said plurality of receptacle stations in a receptacle transfer position with respect to said access opening,

said incubator being positioned radially outside an arc swung by said receptacle carrier assembly of said transport mechanism to permit said receptacle carrier assembly to rotate without interference from said incubator and said

incubator being oriented so that said access opening is positioned adjacent the arc swung by said receptacle carrier assembly of said transport mechanism to permit said transport mechanism:

(a) to insert a reaction receptacle carried thereby through said access opening and into an empty one of said plurality of receptacle stations by rotating said receptacle carrier assembly into cooperative alignment with said receptacle access opening and moving said manipulating hook member in a first direction with respect to said receptacle carrier assembly when said command-responsive closure mechanism is in said open position to move the reaction receptacle from said receptacle carrier assembly, through said receptacle access opening, and into supported engagement within the empty receptacle station, and

(b) remove a reaction receptacle from a receptacle station of said receptacle carrier by rotating said receptacle carrier assembly into cooperative alignment with said receptacle access opening and moving said manipulating hook member in said first direction when said command-responsive closure mechanism is in said open position to insert at least a portion of said manipulating hook member through said receptacle access opening to engage the manipulating structure of the reaction receptacle carried in said receptacle station and subsequently moving said manipulating hook member in a second direction with respect to said reaction receptacle carrier assembly to draw the reaction receptacle from said receptacle station, through said receptacle access opening, and into supported engagement within said receptacle carrier assembly.

7. A device for performing a magnetic separation purification procedure on a solution which includes magnetically responsive particles and is contained in a reaction receptacle, said device comprising:

a receptacle carrier unit constructed and arranged to receive a reaction receptacle containing a solution which includes magnetically responsive particles and to carry the reaction receptacle throughout the magnetic separation purification procedure;

a magnet moving structure including at least one magnet generating a magnetic field, said magnet moving structure being constructed and arranged to move said at least one magnet between first and second positions with resect to the reaction receptacle carried in said receptacle carrier unit,

wherein said magnetic field of said at least one magnet draws the magnetically responsive particles to an inner surface of the reaction receptacle adjacent to said at least one magnet when said at least one magnet is in said first position, and wherein the effect of said magnetic field on said magnetically responsive particles is less when said at least one magnet is in said second position than when said at least one magnet is in said first position;

a fluid transfer mechanism constructed and arranged to selectively dispense fluid into the reaction receptacle carried in said receptacle carrier unit and withdraw fluid from the reaction receptacle; and

a carrier agitator mechanism operatively coupled to said receptacle carrier unit and constructed and arranged to impart a cyclic motion to said receptacle carrier unit to agitate and mix the solution contained in the reaction receptacle carried in said receptacle carrier unit.

8. An assembly comprising:

a first ring assembly constructed and arranged to be rotatable about a first axis of rotation, said first ring assembly including an annular fluid container carrier portion having an inner periphery and an outer periphery between which said fluid container carrier portion is defined, said fluid container carrier portion being constructed and arranged to carry a plurality of fluid containers; and

a second ring assembly constructed and arranged to be rotatable independent of said first ring assembly about a second axis of rotation that is generally parallel to said first axis of rotation, said second ring assembly being positioned with respect to said first ring assembly so that at least a portion of an outer perimeter of said second ring assembly is disposed radially inwardly of said inner periphery of said fluid container carrier portion of said first ring assembly,

said second ring assembly being constructed and arranged to carry a plurality of pipette tips thereon.

9. The assembly of claim 8, wherein said second ring assembly includes a pipette tip carrier portion having an inner periphery and an outer periphery between which said pipette tip carrier portion is defined, and wherein said assembly further comprises an inner rotatable assembly constructed and arranged to be rotatable independent of said first and second ring assemblies about a third axis of rotation that is generally parallel to said first and second axes of rotation, said inner rotatable assembly being positioned with respect to said second ring assembly so that at least a portion of an outer perimeter of said inner rotatable assembly is disposed radially inwardly of said inner periphery of said pipette tip carrier portion of said second ring assembly, said inner rotatable assembly being constructed and arranged to carry a plurality of fluid containers thereon.

10. A device for agitating the fluid contents of at least one container, said device comprising:

a turntable structure constructed and arranged to be rotatable about a first axis of rotation;

one or more container holders, each having an axis of rotation and being constructed and arranged to hold a container therein, said container holders being mounted on said turntable structure so as to be rotatable therewith and so that said axis of rotation of each container holder is generally parallel to said first axis of rotation;

a container holder mounting assembly associated with each one container holder, said container holder mounting assembly being constructed and arranged to mount said associated container holder to said turntable structure and to permit said associated container holder to rotate about a second axis of rotation that is generally parallel to and spaced from both said first axis of rotation and said axis of rotation of said container holder; and

rotational motion coupling elements operatively associated with said turntable structure and said container holder mounting structure and constructed and arranged to cause each container holder to rotate about said second axis of rotation as said turntable structure rotates about said first axis of rotation.